P.114 (will also be presented as poster pitch)

DO LEGUME-BASED INTERCROPS IMPROVE SOIL FAUNA AND SOIL MICROBIAL DIVERSITY? EXAMPLE OF THE COWPEA-CASSAVA INTERCROPPING SYSTEM IN NORTHERN VIETNAM (YEN BAI PROVINCE)

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Industrial agriculture has allowed food safety through the crop homogenization and the massive use of pesticides and chemical fertilizers. This intensive agriculture has positively influenced the crop productivity but has also negatively affected the environment with direct consequences on soil health and productivity. The importance of the micro and macro organisms in the sustainability of soil fertility is widely recognized. Soil fauna represents 23% of the global fauna and contributes to most of the ecosystem services such as porosity, soil aggregation, control of the microbial activity and plant protection against pests and diseases. To mitigate the collateral effects of intensive agriculture on soil productivity in South East Asia, agro-ecological practices are currently promoted, including the use of legumes in intercropping systems. We studied the effect of the intercropping system cassava-cowpea (*Vigna unguiculata* L.) on the soil biotic compartment in Yen Bai province, a mountainous region in the North of Vietnam. Intercropping resulted in the increase of macro fauna richness and evenness. Intercropping system also significantly enhanced both diversity and abundance of soil micro fauna. The high throughput sequencing analysis of the microbial community showed that bacterial communities' abundance and richness were significantly higher in intercropping system than in mono-cropping fields. However, intercropping did not significantly affect the fungal communities and the soil parameters including pH and organic matter. Our results highlight the importance of the promotion of agro ecological practices such as legume intercropping systems in the Highlands in Northern Vietnam where the sustainability of the ecosystem is very fragile.

P.115

SPATIAL DISTRIBUTION OF ROOT EXUDATES AND ITS EFFECTS ON MICROBIAL FUNCTIONS UNDER DROUGHT

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